National Institute of Environmental Health Sciences

Summer climate and mortality in Vienna - A human-biometeorological approach of heat-related mortality during the heat waves in 2003

Author(s): Muthers S, Matzarakis A, Koch E
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Abstract:

BACKGROUND: Strong heat load has negative impacts on the human health and results in higher mortality during heat waves. In Europe, the summer 2003 was responsible for a high number of heat-related deaths, especially in Western Europe. Vienna was only partially affected. The aim of this study is to compare the heat-related mortality of 2003 with other years and to analyze whether 2003 was exceptional in Vienna. METHODS: The analysis is based on both meteorological and mortality data for the federal state of Vienna (Austria) for 1970-2007. We used the human-biometeorological index Physiologically Equivalent Temperature (PET) in order to assess the heat load affecting the human body, and considered short-term adaptation by the HeRATE approach. Each day between April and October was classified according to its thermal stress level and the mean mortality for each class was analyzed. Two approaches, with and without long-term sensitivity trends were considered. RESULTS: Mortality increases significantly with thermal stress, but this increase attenuated in the last decades. Based on the sensitivity for the period of investigation, 2003 was the year with the highest heat-related mortality. Including the long-term sensitivity trend, other years (1992, 1994 and 2000) were characterised by higher values. DISCUSSION: In the last decades the number of days with heat stress increased, but the sensitivity to heat stress decreased. This could indicate long-term adaptation processes. Hence, heat-related mortality in 2003 was high, but not exceptionally high.

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Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Temperature, Other Exposure

Temperature: Extreme Heat, Fluctuations

Other Exposure: physiologically equivalent temperature

Geographic Feature:

resource focuses on specific type of geography

Urban

Geographic Location: ☑

resource focuses on specific location

Non-United States

Non-United States: Europe

European Region/Country: European Country

Other European Country : Austria

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Morbidity/Mortality

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Time Scale Unspecified